7. ENVIRONMENTAL PLANNING

A. INTRODUCTION

The Environmental Planning Element is intended to examine environmental issues and address the anticipated effects of future growth and development on air quality, water quality and natural resources. The City of Cottonwood recognizes there is a need to support a sustainable way of life that safeguards our natural resources and ensures a safe environment for our residents and visitors. Cottonwood is committed to encouraging development that preserves its physical and cultural environments and to taking a balanced approach to maintaining a healthy, safe, clean environment.

The Environmental Planning Element encourages development standards that address preservation of air and water quality, maintenance of soils and slopes, and other natural resources. The General Plan addresses environmental and economic sustainability by encouraging focused infill development in proximity to existing infrastructure and transportation systems. Aside from reducing costs for infrastructure, focused and efficient infill development provides a scale of development which better enables pedestrian and bicycle-friendly environments and sets up opportunities for preserving open space areas and scenic views.

B. LEGISLATIVE REQUIREMENTS

Arizona Revised Statues (A.R.S. § 9-461.05.3) specifies that a general plan must have an:

> "Environmental Planning Element that contains analysis, policies and strategies to address anticipated effects, if any, of plan elements on air quality, water quality and natural resources associated with proposed development under the general plan. The policies and strategies to be developed under this element shall be designed to have community-wide applicability and shall not require the production of an additional environmental impact statement or similar analysis beyond the requirements of state and federal law."

The Environmental Planning Element identifies:

- The existing physical conditions of air quality, surface water quality and natural resources and how those physical elements have contributed to the positive and healthy quality of life in Cottonwood.
- Recognition that development and population growth is likely to continue and implementation of appropriate environmental preservation measures will have a positive impact on the quality of life, economy and community sustainability.
- Strategies to overcome pollution, noise, erosion, urban heat island effects, adverse air quality and sub-standard water quality.
- Goals and Objectives to ensure a balanced approach for protecting the environment as development occurs and continuance of a safe and healthy environment with regards to air quality, water quality and natural resources.

C. KEY ISSUES

1. **Regional Environmental Planning.**
   The General Plan acknowledges that Cottonwood exists as part of a larger regional community in the Verde Valley. These communities share many environmental interests, particularly with regard to air and water quality, land conservation, open space, scenic view areas, and other issues of environmental sensitivity. It is therefore essential that these communities work cooperatively to identify environmental issues and to develop recommendations and programs that address the issues.

2. **Air Quality.**
   Although the local air quality is generally good, the region is subject to occasional inversions similar to other valleys in the State. In addition, as the population increases, there will be an increase in air quality impacts from vehicle exhaust, wood stoves, driving on dirt roads, construction activity, industrial uses and general activity. Policies and programs to protect air quality should be in place to minimize the potential for such negative impacts.

3. **Water Quality.**
   Activities that may have a negative impact on water quality are not always obvious to see. Runoff from streets and properties, agricultural and landscape runoff, and general dumping of hazardous household waste products into the municipal sewer system can all contribute to negative water quality impacts on local water sources. Education and behavioral and operational alternatives are important parts of a program to ensure the quality of water is maintained for future generations.

4. **Natural Resources.**
   Protection of natural systems is a key goal. Thriving plant communities, healthy wildlife and associated habitat, stable soil structure, fresh air, clean water, a free flowing river and abundant natural resources are desired for the benefit of all. A healthy environment goes hand in hand with a healthy prosperous economy.

5. **Recycling and Resource Recovery.**
   Reduction of waste and re-use of resources helps the environment, saves money, creates more jobs and is essential for long-term sustainability of environmental and economic systems. Local re-use and re-manufacturing of recovered materials can result in net job gain.

6. **Energy Conservation.**
   Energy is produced and used in many ways so conservation strategies need to be developed to cover the range of energy uses. Building design, land use decisions, transportation choices, electric generation, and many of the products we use throughout the day all have some relationship to the use of energy. Choices that are made with the design and use things can have an impact on the amount of energy that is required.

7. **Sustainability Goals.**
   Long-term environmental, social and personal sustainability is the goal. The General Plan encourages taking a multi-level approach for all types of program development and decision making so as to consider the consequences of such actions over time and provide the best possible decisions. The continued development of environmentally sensitive codes and ordinances is recommended to ensure the availability of clean and abundant air, water and natural resources are preserved and maintained for future generations.

D. ENVIRONMENTAL PLANNING

The Environmental Planning Element consists of five major categories, including:

1. Air Quality
2. Water Quality
3. Natural Resources
4. Recycling and Resource Recovery
5. Energy Conservation

1. AIR QUALITY

Air pollution sources tend to increase with population growth and development. In order to ensure that clean air is maintained for future generations, there is a need to enact policies and programs early in the process to address the sources of such impacts. Increased number of vehicles, unpaved roads and parking lots, old-style wood burning stoves, general construction activities, and various commercial and industrial uses can contribute to air quality issues.

Various pollutants associated with poor air quality may lead to public health problems, as well as a range of environmental and economic impacts. Burning of fuels from automobiles and industrial sources contributes to a range of air pollutants, including carbon monoxide, ozone, sulfur dioxide, nitrogen dioxide and lead. Airborne particulate matter whose aerodynamic size is less than ten micrometers (PM10) can be caused by a combination of natural wind borne dust, smoke from various sources, vehicle travel on dirt roads and unpaved parking lots, construction activity, agricultural practices and general vehicle use.

As Cottonwood and the region continue to grow, the expectation for good, clean air will become increasingly at risk. Land use planning that encourages mixed use and planned developments can result in fewer automobile trips and a reduction in vehicle emissions. Development strategies that encourage walking, bicycling and transit use also can result in lower automobile emissions. Policies that require paved roads and parking lots in association with new development will address significant air quality concerns associated with dust and particulate matter.

As there is a direct correlation between vehicle emissions and automobile traffic, General Plan policies encourage focused, infill, planned development that includes a mix of basic uses in relatively close proximity to one another. Such land use policies can help reduce the number and overall distance of local vehicle trips by supporting alternative modes of transportation. Much of the dust that is generated in the Verde Valley area is the result of construction activity, unpaved roads and general traffic levels. The City can address those impacts with additional surfacing requirements, adding more detailed review criteria for grading plans for developments, and requiring and enforcing watering of active construction sites with reclaimed water during dry periods.

2. WATER QUALITY

- **Ground Water:** The local water source is mainly from the aquifer that underlies the upper Verde Valley area with other water located west of the Verde Fault along the Black Hills range from Chasm Creek to Jerome. Various formations contribute to the ground water source. Cottonwood is not in an "Active Water Management Area" (areas where a 100 year water supply must be assured for new development) but has been designated by the state to be in an "Adequacy Area" (an area with adequate water supply.)

- **Surface Water:** The Verde River Watershed is primarily comprised of runoff from the Mogollon Rim to the north and northeast with some contribution from the Black Hills range to the west. Fourteen separate sub-watersheds contribute to the Verde River flow and eight of these are upstream of Cottonwood. The surface flow of the river varies considerably due to irrigation diversion and high seasonal differences in evapotranspiration.

Water Supply and Quality Summary:

- Since 2005, the potable water service for all municipal and industrial uses within the City has been provided by the City of Cottonwood's municipal water system. Cottonwood tests the quality of the water provided as required by the Arizona Department of Environmental Quality (DEQ) and the federal Environmental Protection Agency (EPA) to ensure it meets federal safe drinking water standards as set by the EPA.

- The city wastewater treatment plant was expanded to treat around 1.5 million gallons per day. The reclaimed water from this facility represents a substantial resource for future reuse and groundwater recharge. Studies are underway to determine the feasibility of recharging reclaimed water back into the aquifer to reduce groundwater depletion from pumping. Currently, most of the reclaimed water is discharged to Del Monte Wash with a small portion utilized to irrigate the common area landscape in one subdivision.

- The nearly 180-mile long Verde River is a significant resource in Arizona. It is one of the desert's last free-flowing rivers sustaining a large regional wildlife population and a lush riparian community. Since 1986, the state has purchased or obtained through donation parcels of land in the area that is known as the **Verde River Greenway State Natural Area** between the Tuzigoot and Bridgeport bridges. The Verde River and surrounding riparian corridor support nearly twenty threatened or endangered species including river otter, southwestern bald eagles, southwestern willow flycatchers, and lowland leopard frogs. The quality of the riparian environment can be impacted by pollutants carried by storm water discharge from nearby developed areas. The General Plan supports the goals of the Verde River Greenway to maintain the natural riparian corridor along the riverside and adjacent to the major flood tributaries, so as to help filter pollutants and protect these highly valued environments.

- Other sources of water pollution include non-point source pollution, such as run-off from streets and dumping of household toxic and automotive wastes. Education programs to encourage safe and proper disposal of household toxic wastes will assist in reducing water contamination from non-point source pollution.

Water Quality Recommendations:

a. Continue to monitor water quality in the ground and support the efforts of ADEQ and others to monitor points along the Verde River.
b. Educate and take action on reducing non-point source uses.
c. Establish criteria and promote natural bio-filters to process runoff from parking lots and roadways to remove petroleum and related contaminants before release to natural drainage-ways.
d. Support education and alternatives regarding use of fertilizers, herbicides and pesticides.

3. NATURAL RESOURCES

Natural resources found in the area include an abundance of clean air and water, numerous plant and wildlife species and their associated habitats, and perennial rivers and streams. The Verde River Greenway, major washes, drainages and habitat areas define complex ecosystems that are home to many inter-related species of plants and animals. Land use policies that encourage preservation of natural areas in association with new development not only help to protect those natural areas, but also provide a valuable amenity that adds value to the development. Cottonwood provides a unique small town character surrounded by a beautiful, wild and scenic natural environment. As development continues, there are a number of programs that can help maintain these valued resources, including the following:

- **Urban Heat Island Effect:** Large parking lots and structures tend to absorb and re-radiate heat, causing localized and cumulative increases in temperature. These impacts can be minimized with the use of drought-tolerant shade trees and native landscaping planted within and around parking lots and buildings. Innovative parking lot design techniques can be designed to capture rainwater runoff in scuppers to divert to side channels to use for irrigation of landscaping.
- **Erosion and Drainage:** The arid environment features a fragile ecosystem and soils that are very prone to erosion and the effects of storm water runoff. Identification and preservation of natural washes and drainageways should be integrated with a stormwater management strategy.
- **Noise:** Peace and quiet in neighborhoods and homes is one of the most highly valued qualities indicated by surveys. Enforcement of the City noise ordinance to reduce or eliminate excessive nuisance noise will help protect these qualities.
- **Dark Skies:** Increased activities and outdoor lighting compete with starlit skies at night. The City's lighting code is based on a progressive model that is intended to allow adequate night time lighting and safety while minimizing unnecessary upward lighting of the sky.

4. RECYCLING AND RESOURCE RECOVERY

Cottonwood residents depend on land resources outside of the region to provide waste disposal facilities. A refuse transfer station is located in Cottonwood for residents; however, the Grey Wolf Regional Landfill Facility is located about thirty-five miles from Cottonwood off of SR 169 near Dewey-Humboldt. Moving the waste out of the region on a daily basis increases fuel costs, vehicle wear and tear on roadways, and labor costs. Participation in waste reduction and recycling programs will lengthen the life of a landfill and reduce the costs associated with permitting and constructing new landfill sites.

Additionally, recycling programs can provide economic development opportunities through the promotion of regional secondary markets for material processing and product manufacturing businesses. Although there may be additional up-front costs for the collection, processing and distribution of recycled waste materials, the secondary use of these materials can be cost-effective in terms of processing and remanufacturing and there is a cost savings from prolonging the life of landfills. Over the long-term, at the state and national level, with coordinated programs, recycling results in net job gain and net economic benefits.

- **Drop-Off Centers:** A number of drop-off recycling facilities are located around Cottonwood. Residents can drop off various materials, including aluminum cans, steel cans, mixed paper, cardboard, mixed plastics, clear glass and colored glass.

- **Electronic Recycling:** The City provides residents the opportunity to drop off old and obsolete electronic equipment and devices, such as computers, printers, televisions and similar items, so they may be recycled rather than dumped in the landfill. Most electronic equipment includes metals, plastics and other valuable materials that can be recycled. Also, many electronic devices include potentially toxic materials that would otherwise end up in the landfill.

- **Prescription Medicines:** Out-of-date or unneeded Prescription Pills only. No liquids, creams, or other forms of drugs or medicines. A drop off box is provided at the Cottonwood Police Department (Public Safety Building) 199 S. 6th St. Cottonwood, AZ for residents to drop off out-of-date or obsolete prescription pills and pill containers. People typically throw out of date medicines in to their regular household trash or they flush them down the toilet. Unfortunately, neither of these options are considered safe for the environment or water sources. Proper disposal of unused or out-of-date pharmaceuticals is necessary to ensure unwanted consequences to the environment and public health.

5. ENERGY CONSERVATION

Energy conservation saves money, reduces pollution at the source and results in a cleaner environment. Conservation programs can be applied to a number of issues, including electric power generation, heating and cooling of buildings, and transportation uses. The City can promote energy conservation through a range of programs, including retrofitting City buildings with improved insulation, energy efficient lighting, and efficient cooling and heating technology. In addition, the City can ensure new vehicles are fuel-efficient models, support recycling by purchasing recycled content products whenever possible, and ensure any new City buildings include energy-efficient designs that incorporate solar and natural climatic principles, such as site orientation and use of local materials. Land use policies can encourage new development to recognize and offer incentives for site development, building orientation and appropriate material use that take advantage of natural energy-efficient principles.

LEED Certification and Green Building.

The LEED (Leadership in Energy & Environmental Design) Certification system managed by the U.S. Green Building Council provides a rating system for Green Building. (www.usgbc.org/leed) LEED provides a tool that addresses the entire building lifecycle recognizing best-in-class building strategies. Rating systems can be applied to a range of building and development types, including new construction, existing buildings, schools and neighborhoods. Points are given for various sustainability features, including site design, materials, water and energy efficiency, and innovation features. The rating system results in Platinum, Gold, Silver and Certified levels for projects. Besides the recognition given to LEED certified buildings, there are numerous direct benefits provided by more efficient, high performance buildings through energy savings, increased comfort, healthier environments, and higher value investments.

Energy Conservation for Buildings: There are numerous opportunities to conserve energy in the design of new buildings and through retrofitting existing buildings with energy-efficient technology and natural design techniques. Some of these techniques include:

- **Technology:** Weatherization programs that add insulation, control air flow and leakage, and upgrade windows can reduce summer cooling and winter heating needs. Replacing older lighting fixtures with energy efficient fixtures can reduce energy use and lower costs. Most of the local school districts, for example, have recently been taking advantage of state and federal programs by installing parking shade structures that include rooftop solar panels for electric generation.

- **Natural Design:** Taking advantage of natural lighting techniques in the design of buildings can significantly lower lighting needs in commercial buildings. Trees and landscape planting on the south and west sides of buildings has been shown to reduce summer cooling costs by as much as 40% in this climate. Shading over windows can be designed to allow the lower winter sun to reach windows to provide warmth when needed while the higher summer sun is blocked from adding unwanted heat.
- **Codes and Policies:** City building codes should be reviewed to identify opportunities to encourage "green development" and more energy efficient forms of construction. Government offices, schools, hospitals, and larger institutional uses have an opportunity to incorporate alternative energy sources into their facilities. Doing so helps to set an example and encourage use of renewable energy sources and efficient design throughout the community.

E. GOALS AND OBJECTIVES – Environmental Planning

GOAL F-1 PROVIDE A SAFE AND SUSTAINABLE ENVIRONMENT FOR COTTONWOOD AND THE SURROUNDING COMMUNITY.

Objective F-1. A With respect to the principles of civility in talk and action, continue to work closely with regional groups, agencies, municipalities and other land jurisdictions to coordinate efforts to preserve natural resources in Cottonwood and throughout the Verde Valley.

Objective F-1. B Support energy-efficient and environmentally sound building and construction practices, including nationally recognized ratings programs, such as the LEED (Leadership in Energy & Environmental Design) Certification program by the U.S. Green Building Council.

Objective F-1. C Ensure all existing and updated building codes allow and encourage sustainable development and energy efficient construction.

Objective F-1. D Ensure that proposed master planned communities and other planned development projects incorporate the highest standards for environmentally beneficial objectives.

Objective F-1. E Create educational programs, including information on the City web site, as well as brochures and printed materials that address environmental protection, mitigation measures, and conservation techniques for both residential and commercial properties.

Objective F-1. F Support comprehensive programs that include high level of air and water quality, household and commercial recycling, energy conservation and related public education.

GOAL F-2 MAINTAIN AND IMPROVE AIR QUALITY STANDARDS

Objective F-2. A Continue to identify and address the issues that contribute to the degradation of air quality and work towards minimizing the issues before air pollution can become a problem.

Objective F-2. B Support efforts to pave or place impervious compacted and/or sealed surfaces on unpaved roads, alleys, driveways and parking areas so as to control dust.

Objective F-2. C Ensure that dust control measures are enforced during construction and grading activities, including use of reclaimed water for dust supression.

Objective F-2. D Ensure compliance with landscaping regulations pertaining to the installation and maintenance of ground cover on undeveloped portions of development sites.

Objective F-2. E Encourage alternate modes of transportation as a means to reduce automobile trips through continued improvements to the city-wide pedestrian and bicycle route systems and continued support for the Cottonwood Area Transit (CAT) system.

GOAL F-3 ENSURE THE HIGHEST POSSIBLE LEVEL OF WATER QUALITY AND WATER CONSERVATION PRACTICES.

Objective F-3. A Continue to protect and maintain the City's excellent water quality by utilization of Best Management Practices, including controlling stormwater runoff from construction projects, educating the public on non-point source pollution activities and other measures that reduce the potential to degrade surface and groundwater quality.

Objective F-3. B Support development of the reclaimed water plant and distribution system, and promote the use of reclaimed water for open space, public recreation areas and other non-potable uses.

Objective F-3. C Support use of storm water, rainwater harvesting and gray water for irrigation of site landscaping within existing and proposed developments.

Objective F-3. D Develop and implement a comprehensive system-wide water conservation program for the Cottonwood Utility Department service area.

GOAL F-4 SUPPORT ENERGY CONSERVATION PROGRAMS.

Objective F-4. A Develop coordinated building code and design review standards for energy conservation, including the use of native drought tolerant shade trees, building orientation, roof and building colors, architectural shading, use of wind or solar energy, reclaimed water, high efficiency appliances, the use of recycled materials, and natural day-lighting techniques.

Objective F-4. B Perform energy audits and support upgrades to City of Cottonwood municipal buildings and facilities to improve energy conservation techniques and materials, including energy-efficient heating and cooling systems, energy-efficient lighting, building insulation, and technical control systems.

Objective F-4. C Develop a comprehensive plan to upgrade the energy efficiency of City fleet vehicles, including retrofitting existing vehicles where feasible, ensuring all new vehicles are fuel efficient, and adjusting management operations where cost-effective, energy savings are indicated.

GOAL F-5 ENCOURAGE AND SUPPORT PROGRAMS THAT MAINTAIN BALANCE BETWEEN THE NATURAL AND BUILT ENVIRONMENT.

Objective F-5. A Review and update management of storm water runoff standards so as to further reduce waste of potable water, enhance wildlife and reduce the impact of erosion.

Objective F-5. B Protect existing washes from pollution through educational programs that describe non-point source pollution and related mitigation alternatives.

Objective F-5. C Review existing City codes and zoning regulations to encourage development that is sensitive to local topography, including natural washes, native vegetation, steep hillsides, riparian corridors, view corridors and solar orientation.

Objective F-5. D Support volunteer groups and individuals that adopt major washes, open space areas and other public land natural areas for the purpose of removing trash, beautification and monitoring.

Objective F-5. E Establish buffer zones adjacent to riparian areas and other critical wash corridors that help to preserve the integrity of the natural setting and serve to filter pollutants from stream channels.

GOAL F-6 SUPPORT RECYCLING AND RESOURCE RECOVERY PROGRAMS.

Objective F-6. A Support recycling programs by continuing to make space available for the material drop-off collection facilities and through on-going education programs.

Objective F-6. B Encourage economic development programs that support use of secondary materials in local businesses and development of new business that use or process recycled content materials and products.

Objective F-6. C Support a comprehensive recycling program for City of Cottonwood facilities and programs, including recycling stations for City offices and facilities, purchase of recycled materials and supplies for City uses, and policies to repair and reuse equipment where such programs are cost effective.